

**RESPONSIVENESS SUMMARY FOR
INTERIM MEASURES/INTERIM REMEDIAL
ACTION PLAN AND DECISION DOCUMENT**

**881 HILLSIDE AREA
OPERABLE UNIT NO. 1**

U.S. DEPARTMENT OF ENERGY
Rocky Flats Plant
Golden, Colorado

JANUARY, 1990

"REVIEWED FOR CLASSIFICATION

By R. B. Hoffman (L)

Date 6-19-90

A-0001-00007B

ADMIN RECORD



Department of Energy

ROCKY FLATS OFFICE
P.O. BOX 928
GOLDEN, COLORADO 80402-0928

JAN 05 1990

Mr. David C. Shelton, Director
Hazardous Material & Waste Management Division
Colorado Department of Health
4210 East 11th Avenue
Denver, Colorado 80220

Lou Johnson, Chief
RCRA Implementation Branch
U.S. Environmental Protection Agency, Region VIII
999 18th Street, Suite 500, 8 WM-C
Denver, Colorado 80202-2405

Gentlemen:

Enclosed are two (2) copies each of the final "Interim Measures/ Interim Remedial Action Plan and Decision Document" and the "Responsiveness Summary" for the 881 Hillside Area. The submission of these two documents by January 5, 1990, meets with schedules outlined in the Interagency Agreement (IAG).

Please contact me, or have your staff contact Thomas T. Olsen, of my staff, at 966-2762 if you have further questions.

Sincerely,

Original Signed By
David P. Simonson

David P. Simonson
Manager

2 Enclosures (2)

cc w/o Enclosures:

M. Arndt, EG&G

✓ T. Greengard, EG&G

P. Frohardt, CDH

M. Hestmark, EPA

N. Miullo, EPA

✓ Jack McNett Bldg. 130 - 966-7253



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5 January 1990

Mr. Tom Greengard
EG&G
Rocky Flats Plant
P. O. Box 464
Golden, Colorado 80402-0464

SUBJECT: Transmittal of Responsiveness Summary and
Final Interim Measures /Interim Remedial
Action Plan and Decision Document for the 881 Hillside Area
Work Order Number: 2029-51-01

Dear Tom:

Please find enclosed 10 copies of the subject documents. Four of the copies of each document are being delivered to EPA and CDH on behalf of DOE. Please let me know how many more copies you desire and we will have them produced as soon as possible.

WESTON appreciates being given the opportunity to provide this service to EG&G. Please do not hesitate to call if you have any questions.

Sincerely,

ROY F. WESTON, INC.

Michael A. Anderson Ph.D., P.E.
Project Director

MAA

RES. CONTROL
GOING CTR. NO.

20039

DIST.	
Mr. H.	
Mr. H.	
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Mr. R.L.	
Mr. H.L.	
Mr. R.N.	
Control	X
Admin	
ENCL	X
DTM	X
SR	X
WGS	X
T	X
Classification:	
as filed	X
initial	
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EG&G ROCKY FLATS

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January 5, 1990

90-RF-0059

David P. Simonson
Manager
DOE, RFO

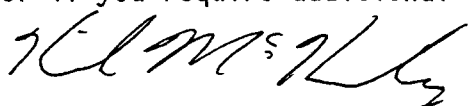
881 HILLSIDE INTERIM ACTION

Ref. Documents:

- (a) Responsiveness Summary for Interim Remedial Action Plan, 881 Hillside Area (Operable Unit No. 1)
- (b) Final Interim Remedial action Plan, 881 Hillside Area (Operable Unit No. 1)

The aforementioned documents were submitted to the Environmental Protection Agency and the Colorado Department of Health January 5, 1990, in accordance with the draft Interagency Agreement schedules.

Please contact T.C. Greengard at extension 7121 if you have any questions or if you require additional copies.


K.B. McKinley, Director
Environmental Restoration

TCG:dkf

Orig. and 1 cc - D.P. Simonson
Enclosure
As Stated (2)

MASSIER SIG

Copy to Ltr. No.

APPROVALS:

3 Typist initials

CG DKF

46 Rev. 1/901

**PROPOSED
INTERIM MEASURES/INTERIM REMEDIAL
ACTION PLAN AND DECISION DOCUMENT
881 HILLSIDE AREA
(OPERABLE UNIT No. 1)**

RESPONSIVENESS SUMMARY

**U.S. Department of Energy
Rocky Flats Plant
Golden, Colorado**

January 1990

A. OVERVIEW

The Department of Energy (DOE) is pursuing an Interim Measure/Interim Remedial Action (IM/IRA) at the 881 Hillside Area (Operable Unit No. 1) at the Rocky Flats Plant (RFP). This interim action is to be conducted to minimize the release of hazardous substances from this Area that pose a potential long-term threat to the public health and environment. The plan involves the collection of contaminated ground water, treatment by UV/hydrogen peroxide oxidation and ion exchange, and surface discharge of treated water that meets or exceeds applicable water quality standards for parameters known to be present in the ground water. Complete information is presented in the document entitled "Final Interim Measures/Interim Remedial Action Plan and Decision Document, 881 Hillside Area, Operable Unit No. 1", dated January, 1990. Information concerning the proposed Interim Remedial Action was presented during a public meeting held from 6 to 10 p.m., Thursday, November 9, 1989, at the Front Range Community College in Westminster, Colorado.

This Responsiveness Summary presents all comments received at the public meeting, and DOE's response to those comments. Many of the comments were peripheral to the interim action plan; however, there were a number of technical comments on the plan that DOE feels have been addressed herein. Two major issues that arose were the potential release of plutonium contaminated dust during construction of the interim action, and the routing of Woman Creek flow around Standley Lake, the drinking water supply for Westminster, Thornton, and Northglenn (Woman Creek is the proposed drainage where the effluent is to be discharged). The potential release of plutonium contaminated dust is addressed in the response to comment 6. The discharge to Woman Creek is discussed in the response to comment 1. There is mixed public opinion on routing of the flow around Standley Lake, and in many respects the issue is not germane to the proposed interim action (see our response to comment 1). Relative to the comments received at the public meeting, the public is generally in favor of the proposed interim action plan.

As with the issues mentioned above, there are at times several comments referring to the same issue. To facilitate cross referencing, issues where there were multiple comments are presented below with the associated comment numbers.

<u>ISSUE</u>	<u>COMMENTS REFERRING TO ISSUE</u>
Generation of plutonium contaminated dust	8, 12, 13, 15, 22, 26, 27, 28, 30, 40, 61, 66, 72
Rerouting of Woman Creek flow	1, 21, 77, 78
Lack of upgradient/background data	14, 20, 23
Quality assurance problems	5, 9, 17
UV/Peroxide performance	25, 69
Misrepresentation of surrounding land use	11, 35, 62
Poor report organization	33, 46, 47
Potential for plutonium in ground water	43, 53, 60, 63
Closure of interim action facilities	30, 64
Water storage/treatment capacity	52, 56, 65

These sections of the Responsiveness Summary follow:

- Background on Community Involvement
- Summary of Comments Received during the Public Meeting
- Remaining Concerns
- Attachment: Community Relations Work Plan

B. BACKGROUND ON COMMUNITY INVOLVEMENT

The Communications Department at Rocky Flats is developing a Community Relations Plan to actively involve the public in the decision-making process as it relates to environmental restoration activities. A work plan has been completed and forwarded to the Environmental Protection Agency (EPA), the Colorado Department of Health (CDH), and the public for review. The work plan specifies timeliness and activities planned to complete the Community Relations Plan, including plans for community interviews. Public questionnaires related to development of the plan have been distributed during public meetings for additional input.

In the meantime, efforts have been made to keep the public informed, and solicit public opinion, on current environmental restoration efforts, including the 881 Hillside Area. Notices were published in area newspapers announcing the availability of the public comment period on the Proposed Interim Measures/Interim Remedial Action Plan and Decision Document for the 881 Hillside Area. The public comment period was extended to provide adequate opportunity for public comment. A public presentation on the plan was made during the October meeting of the Rocky Flats Environmental Monitoring Council, while a second meeting to hear public comment on the Proposed Interim Remedial Action Plan was conducted November 9, 1989, at the Front Range Community College. Copies of appropriate documents are available for public review at the Rocky Flats Public Reading Room, U.S. EPA, and CDH.

The Communications Department also is continuing other public information efforts to ensure the public is kept informed of environmental restoration activities and other issues which relate to plant operations. A Speakers Bureau program sends speakers to civic groups and educational organizations, while a public tour program allows the public to visit Rocky Flats. Road tours of areas such as the 881 Hillside are common during public tours, as well as other tours arranged for public officials. An Outreach Program also is in place where plant officials will visit elected officials, the news media, and business and civic organizations to further discuss issues related to Rocky Flats and environmental restoration activities. The Communications Department also receives numerous public inquiries which are answered

during telephone conversations, or by sending written informational materials to the requestor.

Efforts also are under way to expand the Public Reading Room to an offsite location more easily accessible to the public, further ensuring public access to information about the plant. The reading room will house all pertinent public documents about the plant and ongoing environmental restoration activities.

C. RESPONSES TO COMMENTS RECEIVED DURING PUBLIC COMMENT PERIOD

On November 9, 1989, DOE held a public meeting to receive comments on the 881 Hillside Area IM/IRA. These comments are presented here in the order they were received at the public meeting. If written comments were also provided, they are presented here in lieu of the transcription of the verbal comments made at the meeting. However, if verbal comments requiring a DOE response were presented at the meeting that are not reflected in the written comments, they have also been included here. Written comments were also provided by the City of Thornton and EPA that were not verbally presented at the public meeting. Their respective comments are at the end of this section. The comments have been subdivided at points where the issue or subject changes, and the DOE response directly follows. All comments have been numbered sequentially to allow cross-referencing of responses.

COMMENTOR: George Hovorka, Mayor, City of Westminster

Comment 1

I'm appearing on behalf of the City to comment on the Proposed Interim Measures/Interim Remedial Action Plan and Decision Document for the 881 Hillside Area.

The City of Westminster supports the concept and plan to take immediate action to intercept and treat contaminated ground water at the 881 Hillside area. Failure to take such action could lead to the adverse impacts to the City's water supply, Standley Lake, which is located downstream of the 881 Hillside. Standley Lake supplies water to over 180,000 people in Westminster, Thornton and Northglenn, as well as irrigation water for shareholders in the Farmers Reservoir and Irrigation Company. Therefore, it is imperative that this work begin as soon as possible to protect the downstream water users. Westminster submits the following comments on the proposed plan:

The proposed plan calls for the water to be discharged to the south interceptor trench after it has been treated. The water then flows into Pond C-2, which is periodically discharged to Woman Creek, which flows into Standley lake. The City of Westminster strongly opposes this aspect of the plan in the absence of an interceptor canal around Standley Lake. Effluent generated at Rocky Flats should not be allowed to enter Standley Lake in order to protect public health. DOE's actions to oppose the permanent adoption of a water supply classification and associated standards for Woman Creek would further weaken the protection of Standley Lake, increasing the City's resistance to this proposed discharge.

DOE's opposition to the standards goes against DOE's "good neighbor" policy which they have publicly stated. Westminster, Thornton and Northglenn have been working with DOE on developing plans for the interceptor canal. However, no definite solution has been developed. Such an interceptor canal would not only protect Standley Lake during controlled discharges, but also during accidents and unknown releases.

Routing all water from Rocky Flats around Standley Lake effectively solves DOE's credibility problem with the general public, as the water can no longer impact the water supply. Without the interceptor canal, however, the City must seek the most stringent protection available to maintain its high quality water supply. Therefore, Westminster must oppose discharge to the south interceptor trench. Once an interceptor canal around Standley Lake is in place, the discharge as proposed would be acceptable.

Response to Comment 1

DOE recognizes and completely understands the concern of users of Standley Lake that potentially contaminated water could be released from the Rocky Flats Plant and enter this body of water used for drinking, agricultural, and recreational purposes. The issue goes beyond whether the effluent from the interim action treatment system is discharged into Woman Creek via Pond C-2. DOE is studying the issue and has met and will continue to meet with the representatives of the neighboring cities, EPA and CDH to discuss the matter. We do

note that there is public opposition to such a diversion canal (See comment 21). In the mean time, the water in Pond C-2 will continue to be chemically analyzed before it is released to assure that the concentrations of all chemical constituents are below the applicable Colorado Department of Health water quality standards set for the protection of public health and the environment. This monitoring is required by the Plant's National Pollutant Discharge Elimination System (NPDES) permit.

Comment 2

Westminster fully supports the remainder of the plan and urges DOE to pursue implementation of the plan aggressively. Questions did arise, however, during the review of the plan. Many stem from a lack of detail in the plan. For instance, there is no mention of how wide the French drain will be or what will be done with any ground water encountered during the construction operation. There was also not enough information available to determine if the French drain was located far enough downstream to capture all of the possible contaminated ground water. It would be helpful if Westminster could review further plans as they become available.

Response to Comment 2

We inadvertently omitted the width of the french drain. It will be two feet wide and is located hydraulically downgradient of confirmed organically contaminated alluvial ground water. The chemical data are shown in Table 2-2 (upgradient of the french drain) and Table 2-3 (downgradient of the french drain) of the plan (also see discussion on page 2-29). The treatment facility will be on-line to treat ground water collected during construction of the french drain (see the schedule on page 3-2 of the plan). Detailed design plans can be provided to the City of Westminster.

COMMENTOR: Joe Tempel, President, Rocky Flats Cleanup Commission

Comment 3

First of all, the public should be aware that this document describes the cleanup of only 12 of the 166 polluted sites at Rocky Flats. These sites contain cancer-causing volatile organic compounds and uranium tainted soils that have leached into the groundwater. These sites have been given priority for cleanup because the volatile organic compounds have percolated down to the groundwater which enters Woman's Creek which drains into Standley Reservoir, the drinking water supply for the northern suburbs. To put this cleanup proposal in another perspective; it will cost approximately \$6 million to construct and operate compared to an estimate of \$1 billion to cleanup the entire plant site. Therefore, while the RFCC is very excited that cleanup is finally progressing, this action is only the tip of the iceberg; or should we say the tip of the trash pile.

Response to Comment 3

We are aggressively pursuing the investigation and cleanup of the Rocky Flats Plant. Investigations have been conducted at the 881 Hillside Area, the 903 Pad, Mound and East Trenches Areas, and at various units being cleaned up under the Resource Conservation and Recovery Act. We are spending approximately \$ 65 million in fiscal year 1990 on environmental restoration activities. Construction of the final remedy for the 881 Hillside Area is scheduled to begin in 1994.

Comment 4

The public should also be aware that cleanup will take a very long time at the rate DOE is progressing. The purpose of the IRA is to begin cleanup on a temporary basis until a permanent solution can be agreed upon. Unfortunately, the temporary solution will not be operational until the Spring of 1991, about a year and a half away from now. This is not acceptable. Cleanup should be accelerated at the plant.

Response to Comment 4

We understand how the time frame for design, procurement and construction appears lengthy. However, given the size of the project, the 1-1/2 year time frame is not unreasonable. These activities occur in sequence, and several months is required for the procurement of some equipment once it is ordered from the vendor. However, we would like to point out that treatment of contaminated ground water will begin by December 19, 1990. These dates are reflected in the schedule on page 3-2 of the plan.

Comment 5

It is unclear when the permanent solution for these 12 sites will be in place because no schedule has been produced by DOE. This schedule is to be outlined in an Intergovernmental Agreement (IAG) which was due in October. In fact the permanent solution has been under study since 1987 when work began on the Remedial Investigation/Feasibility Study 881 Hillside. These reports have still not been completed because of the inadequacies in the draft reports. The following inadequacies were identified by the DOE Special Assignment Environmental Team in their Report entitled "Assessment of the Environmental Conditions at the Rocky Flats Plant", dated August 1989:

There is inadequate background characterization for metals and radionuclides primarily because there was only one background well drilled upgradient of the site to determine what contamination is being generated on-site versus off-site.

There is a poorly defined extent of contamination because of the few number of test wells (33).

There is inadequate quality control of testing so the data may not be valid.

Therefore, DOE admits that their past studies have been flawed and that a permanent solution cannot be defined until one completely understands the problem. The RFCC requests that these inadequacies be corrected as soon as possible so that a final cleanup solution can be implemented.

Response to Comment 5

The permanent remedy for the 881 Hillside Area is scheduled to begin in 1995. The Phase II remedial investigation (RI) did not resolve all outstanding issues regarding soil and ground water contamination at the 881 Hillside Area. The deficiencies cited above were largely a result of unrealistic schedules for the performance of RIs and feasibility studies (FSs), which was also noted by the Special Assignment Environmental Team. Comprehensive plans for completing the RI/FS will be submitted to EPA in February 1990 in accordance with the draft Inter-agency Agreement (IAG). The draft IAG schedule calls for the final remedial investigation /feasibility study to be completed in 1992.

Comment 6

While the IRA proposes to construct a french drain to collect the pollutants which are leaching into the groundwater, nothing is being proposed to cleanup the contaminated soils. The RFCC is concerned that the citizens and workers downwind of the construction of the drain may be contaminated by the radioactive dust disturbed on the surface of the ground. The RFCC wants to review a Health and Safety Plan which describes how the workers and community will be protected during construction. The RFCC does not want the cleanup to create additional health risks to the workers and the community like that which was experienced at the Rocky Mountain Arsenal. The RFCC also wants adequate monitoring to be in place during construction so that environmental standards are not exceeded.

Response to Comment 6

The nature, magnitude, and extent of contaminated soils is still under investigation; however, it is recognized that plutonium is above background in surface soils at the 881 Hillside Area. Surface soils samples have yielded plutonium concentrations no greater than 5 pCi/gm, with the average level being 1.63 pCi/gm. Higher levels of plutonium are not expected to be encountered because samples did not show measurable concentrations of plutonium below the ground surface. Also, elevated levels of uranium have been identified in surface soils in four small discrete locations (< 10 sq. ft. each) with measured levels as high as 3,072 pCi/gm (draft Environmental Assessment for 881 Hillside (High Priority Sites) Interim Remedial Action, November 30, 1989).

A Rockwell Job Safety Analysis (JSA) will be prepared before construction that will specify dust control measures to limit dust inhalation exposures. (The JSA is a process developed from the Rocky Flats Health and Safety policy. The JSA addresses health and safety protection of outside contractors). These measures include the premoistening of the excavation area with a sprinkler system for three days prior to start-up, and the continued moistening of the site throughout the excavation. Ambient air high volume air samplers will be used to measure radiation and wind velocity. These will be installed before commencement of construction. Operations will be suspended by requirements in the Occupational Safety Analysis (OSA) if wind velocity exceeds 15 mph or alpha radiation exceeds 0.03 pCi/m³ as measured by a high volume sampler located immediately downgradient of the construction activities. (The OSA addresses health and safety concerns originating from routine site operations, and is similar to the JSA.) A Health and Safety Plan will also be prepared for construction activities that will supplement the JSA.

Notwithstanding health and safety controls, an analysis has been made of the potential public exposure from inhalation of dust contaminated with plutonium and uranium, and the

committed effective dose equivalent (CEDE) from such intake. Conservatively assuming the amount of dust resuspended remains less than 10 mg/m^3 (the OSHA regulatory limit on nuisance dust in the work environment), the wind velocity is 3 m/sec, and exposure occurs at the closest property boundary, the CEDE calculated for uranium is 5×10^{-6} Rem, and for plutonium is 8×10^{-8} Rem. These totals may be compared to the DOE radiation protection standard for the public of 1×10^{-1} Rem per year. As can be seen, the public exposure to plutonium and uranium is insignificant relative to the DOE radiation protection standard for the public (Environmental Assessment for 881 Hillside, November 30, 1989).

Even though the health risk from inhalation of plutonium contaminated dust is low at the 881 Hillside, DOE respects the concerns of the public and intends to investigate several options for control of plutonium contaminated dust for use at other more contaminated sites. These options include a vacuum extraction system for removing the uppermost layer of loose soil before construction commences, addition of cement type additives to bind the surface soils and minimize the release of plutonium contaminated dust, and a mobile enclosure with a ventilation/filtering system to remove plutonium dust before it is released to the atmosphere. At all sites where plutonium contaminated soils exist, including the 881 Hillside Area, construction traffic will be carefully routed to further minimize release of any plutonium contaminated dust.

Comment 7

Finally, the RFCC wants to see a Community Involvement Plan which outlines how the community will be informed of the progress of the cleanup and given assurance that environmental standards are being met.

Response to Comment 7

The attachment to this Responsiveness Summary is the Community Relations Work Plan. Implementation of the Community Relations Plan (CRP) will provide the public with accurate, timely, and understandable information, and steps the public can take to participate in decisions regarding cleanup activities at the 881 Hillside Area and the entire Rocky Flats Plant Site. The community relations program will allow the public the opportunity to learn about the Site, the Superfund program, and to provide input on technical decisions during the investigations and studies prior to remediation. The program will also keep the public continuously informed of on-going cleanup activities, including the interim action at the 881 Hillside Area. The Work Plan (see Attachment) provides a schedule for the activities and public involvement that lead to finalizing a Community Relations Plan.

COMMENTOR: Gregory K. Marsh, Treasurer, Rocky Flats Cleanup Commission

Comment 8

Although plutonium deposition on the area surrounding the RFP as a result of the 1957 and 1969 fires and other events is not well understood, the fact remains the National Institute of Standards and Technology (formerly the National Bureau of Standards) chose the soil from the RFP, in July, 1978, to make a plutonium in soil standard. (Development of some natural matrix standards - progress report, Environment International, Vol. 3, pp 395-398, Pergamon Press 1980. Published in Great Britain.) Specifically, the standard, SRM 4353, was made from a 13 cm deep sample taken along the east perimeter fence just north of the southeast corner of the RFP. To make this standard, 600 kg of this soil was "diluted" with 300 kg of soil taken from near the western fence to get the plutonium concentration down to a level of about ten (10) times average, world-wide "background" levels. (From a conversation with Robin Hutchinson, NIST, Gaithersburg, MD. on 12 July, 1989.) This standard reference material is now being used by the scientific community around the world to calibrate their instruments.

Given this fact, how can the surface of 881 Hillside where the french drain is proposed, which is 2.9 kms west of the place from where the soil standard was taken, be free of surface plutonium contamination?

Response to Comment 8

As stated in response to comment 6, it is recognized that plutonium concentrations in surface soils at the 881 Hillside Area are above background and appropriate measures will be taken to minimize any release of plutonium contaminated dust during construction. The Rocky Flats Plant Annual Environmental Report, a public document which provides a summary of the environmental monitoring conducted at the Plant, indicates elevated plutonium levels exist in the surface soils to the east within the Plant boundaries. The data show that the soils may contain up to 10 -100 times background levels of plutonium. However, these levels are typical of those observed at the 881 Hillside Area where the exposure due to dust inhalation has been shown to be minor (see our response to comment 6 for estimated exposures).

Comment 9

After an in-depth discussion with Mr. Tom Greengard of the methods used to determine what, where, and why to drill the monitoring wells that are used to assess the 881 Hillside it seems that no industry accepted protocol was followed. What is the statistical validity of the methods used? If the methods used are invalid and hence a wrong assessment made, was this a cover-up to conceal more important and dangerous conditions elsewhere?

Response to Comment 9

It seems there may have been a misunderstanding concerning the discussion with Mr. Greengard. EPA accepted protocols were followed to locate the monitoring wells at the 881 Hillside Area and include interpretation of existing ground water chemistry data, soil gas measurements, geophysics, and most importantly, mapping of disposal sites based on historical aerial photographs. Statistical methods were not needed to locate monitoring wells because of the information gained from use of these methods was more than adequate. There was and is no cover-up to conceal more dangerous conditions elsewhere.

COMMENTOR: Kim R. Grice, Rocky Flats Cleanup Commission

Comment 10

DOE and its contractors at Rocky Flats have not been very nice neighbors! They have polluted the groundwater and soil at their facility to the extent that remedial action is necessary to protect the public from added health risks. The public deserves to be informed that this is not a cleanup operation of hazardous waste; it is only an interim solution to keep the contamination at these sites from spreading.

Response to Comment 10

The proposed action at the 881 Hillside Area is both an initial cleanup of hazardous waste from past disposal practices and an interim solution to mitigate contamination migration. The interim action will be consistent with the final remedial action for the 881 Hillside Area. It is anticipated this interim action will be a major component of the final remedial action.

Comment 11

The IRA mentioned that RFP is located in a rural area where there was no schools, no hospitals, and no parks within 5 miles of the RFP site. This comment is grossly in error! The facts are that there exists 20 schools, a hospital called "Avista" in Louisville, 11 child care centers, and over 14 parks and public open space areas within 5 miles from the boundary of Rocky Flats. The map shown in figure 2-1 is not an updated map. It also blocks out major development areas east of RFP, and Broomfield is omitted completely. It is recommended that a detailed map showing current development, schools, hospitals, parks, etc., within a 10 mile radius of the RFP boundary be incorporated into this IRA. The population census in this report uses outdated 1980 data, when with a little effort current population figures could easily be obtained from county and city records.

Response to Comment 11

This section of the IRA has been updated to reflect more current information. The final interim remedial action plan that reflects these changes is now available for review in the Rocky Flats Public Reading Room. There was no intent to misrepresent land use in the general vicinity. The oversight was a result of the considerable attention given to the selection of the appropriate interim action given the chemical conditions at the 881 Hillside Area.

Comment 12

There is very little mention in this IRA regarding soil characterization. There is much concern that this remediation project will disturb soils contaminated with varying levels of plutonium and other radionuclides (see HUD's RF Advisory Notice attached). The resuspension of respirable size dust containing radioactive elements could have direct health impacts on citizens residing and working downwind when these particulates are inhaled or ingested. As noted in attached chart, there has been an escalation of airborne contamination during past soil excavations at RFP. The excavation requires 2100 feet of French Drain and 1320 feet of Slurry Walls that are 4-20 feet deep. Excavation also includes over 2500 feet of effluent piping trenches and the excavation and encapsulating 86,000 square feet of contaminated soil. We are not informed of the total amount of soil (cubic yards) that will be excavated at these sites. Much of the proposed remedial area contains large quantities of plutonium contamination of the soil (see attached Krey and Hardy map). A complete chemical and radionuclide soil characterization for specific construction sites has not been performed and included in this IRA, why? Will the proposed sites be tested for total amount of respirable size particulates to determine the amount of airborne dust that could be resuspended during construction? How many cubic yards of soil will be removed from the borrowed site south of Woman Creek; and what will be its characterization? What safety precautions are planned for the workers? What will be the health risks to the public during the

remedial actions? It is recommended that a closed environmental chamber be used to conduct any excavation within, in order to limit and filter resuspended contaminants before release to the outside environment.

Response to Comment 12

There appears to be some misunderstanding of activities associated with the proposed interim remedial action, and activities associated with the other alternatives that were evaluated. The slurry walls and borrow site south of Woman Creek refer to the second alternative, which is not the preferred and proposed interim remedial action.

DOE very much appreciates your concern for generation of respirable size particulates during construction that may be contaminated with plutonium. However, in order to allay your concern, we note that the plutonium contamination is at the surface and therefore the total volume of material excavated should not matter to the generation of respirable size particulates possibly contaminated with plutonium. The french drain and piping are located such that encountering soils contaminated with organics is unlikely. Chemical testing will be conducted on these soils prior to excavation to assess whether organic contaminants or radionuclides are present, so that the appropriate health and safety measures, as well as storage and final disposition of excavated soils can be determined. Our response to comment 6 addresses the potential public exposure to plutonium contaminated dust, and the health and safety measures that will be taken to further minimize these risk. The use of a closed environmental chamber cannot be justified at this time; however, it is being carefully studied as an option to minimize generation of plutonium contaminated dust at more contaminated sites.

Comment 13

The IRA needs to include a comprehensive site specific ambient air monitoring plan. Meteorological data pertinent to these sites is needed to determine direction and distance, etc., that this respirable dust might travel. According to a 1987 Meteorological Tracer Study published in September 1988 by Rockwell, the distribution of emission plumes can be dynamic. The report mentions that during the 12 day study, tracer elements traveled west to the Continental Divide and as far east as 45 miles from the release site located near the 903 Pad. It was interesting to note that during the tests, the plume was in contact with the ground. Sector #2 which is southeast of the RFP, according to the Colorado Department of Health, continually reports the highest levels for plutonium in soils (see CDH map and chart attached).

Response to Comment 13

You are quite correct that meteorological data is necessary for these sites in order to design and implement a sound air monitoring program. DOE fully intends to conduct a comprehensive air monitoring program as part of the health and safety monitoring during construction. All pertinent meteorological data will be incorporated into the plan for this air monitoring program. Please see response to comment 6 for more details.

Comment 14

Deficiency in characterizing extent of soil and groundwater contamination:

- *Vertical/horizontal profile (3 dimensional) of extent of the groundwater plume should be characterized and included.*
- *There are no wells north of the SWMUs.*
- *Existing soil data does not characterize adequately the current status of the contaminated area.*

Response to Comment 14

The response to comment 5 discusses the shortcomings of the previous remedial investigation and the plans for correcting past deficiencies. Wells will be installed north of the Area to assess any impacts to ground water arising from other upgradient SWMUs on the plant site. These wells, and other wells and soil borings are being proposed in the Phase III Remedial Investigation/Feasibility Study Plan to be submitted to the regulatory agencies in February 1990. The data discussed in the interim remedial action plan is of adequate quality (data have been validated and found to be valid or acceptable with qualifications), and provides sufficient detail of the ground-water contamination in surficial materials to justify and define the scope of the proposed interim remedial action.

Comment 15

Radioactive ambient air monitoring program is deficient.

- *Ambient air monitoring should analyze for uranium and americium as well as plutonium.*
- *Design and install new samplers to limit particulate losses within the samplers.*
- *Incorporate flow control systems that will maintain a constant air flow rate over sampling period.*
- *Expedite an air dispersion study to verify and design new ambient air monitoring sampling network.*

Response to Comment 15

An extensive air monitoring network known as the Radioactive Ambient Air Monitoring Program (RAAMP) is maintained at the Plant in order to monitor particulate emissions from Plant facilities and soils. The RAAMP has found ambient air samples for plutonium to be well within the DOE guidelines of $20.0 \times 10^{-15} \mu\text{Ci/ml}$ established for the protection of human health. Americium and uranium are not presently measured because air emissions are expected to be less, and their maximum allowable concentration in air in an unrestricted area is 10 and 100 times greater than plutonium, respectively (Standards for Protection Against Radiation, 10 CFR 20, Appendix B, Table 2).

To further assess emissions of radionuclides and other toxic compounds from the facility, DOE has agreed to improve air quality monitoring at the Rocky Flats Plant (Agreement in Principle with CDH). Air quality monitoring provisions of this Agreement include:

- The DOE will submit a comprehensive air emissions inventory for CDH review.
- The DOE will provide a comprehensive materials balance of VOCs for CDH review.
- The DOE will identify all toxic and radioactive emissions coming from the facility (stacks, vents, ponds, etc.) and will support CDH in the use of an accepted emissions model to predict any areas of off-site impact.
- DOE will conduct promptly the stack testing necessary to verify the amount and type of emissions.
- The DOE will install continuous emission monitors in all appropriate sources to ensure continuous compliance with air pollution requirements.
- CDH will prepare a comprehensive review, in cooperation with EPA and local governments, of the air monitoring system and will implement needed improvements to the air quality monitoring network.

- CDH will deploy VOC ambient monitors off-site, as necessary.

Comment 16

Groundwater data and sampling.

- *Analytic data produced for the 881 site should be organized in a manner for easy reference and rapid evaluation by way of database systems that permit selection and sorting of several parameters.*
- *Sampling procedures to fully document chain of custody.*
- *Sampling team should be provided formal training in the use of methods, etc.*

Response to Comment 16

A computerized environmental data base is maintained in a database format and is called the Analytical Data Management System. With respect to the sampling procedures and training, the ER Program Standard Operating Procedures (SOPs) and Quality Assurance/Quality Control (QA/QC) Plan have been revised and provided to the field personnel. Both classroom and on-the-job training is provided for field personnel. Data validation and audit programs have also been put into place. CDH and EPA have reviewed many of these procedures and will continue to review future plans during cleanup.

Comment 17

Quality assurance

- *A comprehensive quality assurance control program is recommended to adequately document the validity and analytical data for 881 Hillside remedial actions and assessments.*

Response to Comment 17

Quality assurance has suffered in the past with respect to environmental restoration activities. This has been largely due to the aggressive schedules for completing RCRA and CERCLA activities which precluded a thorough quality assurance review of data and deliverables. In effect, a quality assurance program commensurate with the volume of work being performed was missing. A comprehensive QA/QC Program is now currently in place. QA procedures adhere to the Environmental Restoration QA Program Plan and the QA/QC project plans. Chemical analyses are performed in accordance with the EPA Contract Laboratory Program and the QA/QC Plan, and data validation is performed by a qualified independent subcontractor.

Comment 18

Community relations

- *There is a lack of a finalized and implemented community relations plan for the 881 Hillside Remedial Corrective Action Program.*

Response to Comment 18

True, but preparation of a Community Relations Plan including community surveys is in progress. Please see Section B and the attachment to this Responsiveness Summary which contain a summary of community relations activities and the Community Relations Work Plan, respectively.

Comment 19

According to the 1987 Annual Environmental Monitoring Report, VOCs are detected in the bedrock ground water below the 903 Pad in Wells 1287, 1187 and 1487.

- *What effects will they have on the remediation at 881?*

Response to Comment 19

The interim action addresses shallow (alluvial) ground water contamination. Therefore possible bedrock ground water contamination will not influence the interim action. Future investigations at both the 881 Hillside Area and 903 Pad, Mound, and East Trenches Areas will characterize the nature and extent of bedrock ground-water contamination. If contaminated bedrock ground water in wells 12-87, 11-78, and 14-87 is determined to arise from the 881 Hillside Area, then remediation of this bedrock ground water will become a part of the final remedy for that Area.

Comment 20

Why was Well 5586 chosen as a background well?

Response to Comment 20

Well 55-86 was the only alluvial well upgradient of all historical waste disposal sites that was in existence at the time of the remedial investigation of the 881 Hillside Area. DOE recognizes this is far from adequate to characterize background ground water, and therefore a comprehensive background hydrogeochemical characterization program has now been implemented at the Rocky Flats Plant. Fifty wells have been installed and sampled, and over 100 soil samples collected to characterize background ground water and soils in 1989. Background stream sediments and surface water have also been characterized. A draft report was issued on December 15, 1989 (Background Geochemical Characterization Report). The background characterization program is on-going.

Comment 21

They Mayor of Westminster said he would accept said diversion canal to channel effluent from Pond C-2 around Standley Lake. I would like to inform everyone as a citizen of Westminster that said Rocky Flats effluents then would no longer be diverted by Standley Lake, but would flow near many residential areas down Big Dry Creek. This is not an acceptable solution to me.

Response to Comment 21

DOE recognizes your concern on this very controversial issue. Please refer to our response to comment 1.

Comment 22

While it makes sense to attempt to confine the spread of groundwater contamination in order to reduce added health risks imposed on the public, we should also be concerned about the daily emissions of radiotoxic waste from over 50 vents at this facility, and the subsequent inhalation/ingestion of these carcinogens by our family and friends.

Response to Comment 22

DOE appreciates your concern about these emissions. As discussed in our response to comment 15, the RAAMP is implemented in order to monitor plutonium emissions from the facility, and additional more comprehensive monitoring will be undertaken pursuant to the Agreement in Principle.

COMMENTOR: Paula Elofson-Gardine, Director, Concerned Health Technicians for a Cleaner Colorado, Secretary, Rocky Flats Cleanup Commission

Comment 23

The lack of upgradient wells indicates deficiency regarding "background" levels of contaminants versus those found in alluvial measurements and groundwater wells in the area known as the 881 Hillside.

Response to Comment 23

Your are quite correct in pointing out this deficiency. As discussed in our response to comment 14, an upgradient well will be installed in order to define upgradient chemical conditions and allow determination of ground-water contamination originating only from the 881 Hillside Area. Furthermore, a comprehensive background hydrogeochemical background characterization program is now in place as discussed in our response to comment 20. Regardless of background concentrations, the ground-water treatment system proposed as part of the IM/IRA will remove organic and inorganic chemical constituents to levels that are below the applicable CDH water quality standards for the protection of public health and the environment.

Comment 24

There is serious deficiency regarding lack of chemical and radionuclide direct soil analysis both on and off-site for the determination of spread of contaminants originating from the Rocky Flats Plant.

Response to Comment 24

Considerable data exist today regarding on-site and off-site contamination. This data has been collected as part of remedial investigations, and Rockwell's Health, Safety, and Environment Department's environmental monitoring. This latter data is published in the Annual Environmental Monitoring Report. As you may be aware, DOE has recently signed a draft Interagency Agreement with the EPA and the CDH for investigation and cleanup of the Rocky Flats Plant. To supplement the existing data, a number of plans will be prepared in 1990 pursuant to that agreement that will serve to guide the investigations of the nature and extent of contamination at the Rocky Flats Plant. The draft Agreement has been released for public review and comment.

Comment 25

Sources of contaminants are not identified, so that an eventual permanent solution could be initiated. As an interim measure, the peroxide/UV application for destruction of VOCs is controversial, and has not been "proven" for remediations of this size. The benefit of this technology is questionable in terms of the volume it is capable of handling.

Response to Comment 25

You are correct to point out that sources of contaminants have not been adequately identified. Further source characterization is a specific objective of the upcoming Phase III Remedial Investigation of the 881 Hillside Area. With regard to UV/Peroxide, DOE is confident that the system will perform to the expectations inherent in the interim action plan. As described on pages 4-13 through 4-17, it is clear that UV/peroxide is a proven technology at the design flow rate. Also, UV/Peroxide systems are now in use at the DOE Lawrence Livermore facility in California, and locally, at the Boulder Syntex facility and Rocky Mountain Arsenal. Furthermore, the vendor of the equipment has guaranteed it's performance in meeting the

effluent standards given the expected influent characteristics. If during startup of the UV/Peroxide system the unit does not perform to specification, a carbon system may be installed as a final "polishing" unit to assure compliance with effluent standards. A carbon system can be installed readily and would remain in operation as long as needed.

Comment 26

In comparing the site diagrams of the Proposed Interim Measures/IRA Plan and Decision Document for the 881 Hillside area, the 903 Pad, Mound, and East Trenches Remedial Investigation, and the Rocky Flats Plant site map in the Assessment of Environmental Conditions at the Rocky Flats Plant report, it appears that the area blocked out for 881 remediation encroaches in part on the 903 Pad area. If this is so, how will the public be protected during the remediation process from the radionuclides liberated from this process? Resuspension is a problem.

Response to Comment 26

The 881 Hillside Area and 903 Pad Area do indeed overlap. Your review of this information has been thorough. However, the plutonium concentration data for surficial soils in this area of overlap do not pose a threat to the public from dust resuspension during construction. Please refer to our response to comment 6 regarding potential public exposure to plutonium contaminated dust, and techniques for minimization of such dust during construction of the 881 Hillside Area interim remedial action.

Comment 27

Migration from the 903 area to the 881 area is not addressed as a possible source of contaminants. The 885 building is adjacent to the 881 area as well. Where do the discharges from this building drain to? A chart detailing groundwater migration and the plant piping system and drains would assist in determining sources and potential toxicity.

Response to Comment 27

The only contamination arising from the 903 Pad that would influence contamination at the 881 Hillside is resuspension of plutonium contaminated soils. This will be referenced in the final IM/IRA Plan. Potential public exposure to plutonium contaminated dust and health and safety measures to be used during construction that minimize this exposure are discussed in our response to comment 6. Building 885 is a RCRA storage facility from which there are no discharges. The building and surrounding soils will be investigated and closed in accordance with the State of Colorado hazardous waste regulations. Ground water flow in surficial materials is to the south/southeast at the 881 Hillside Area. The proposed french drain has been located to the south/southeast downstream of all known organically contaminated ground water in surficial materials, and is designed to intercept this ground water to prevent it from entering into the ground water of the valley fill alluvium in the Woman Creek drainage.

Comment 28

No mention is made regarding protection of the community during remediation activities. Historically, monitoring of this area has shown elevated readings of radionuclide activity during these types of activities (eg: barrel removal). Please see report # RFP-3914, Dust Transport-Wind and Mechanical Resuspension. We would suggest a containment structure such as temporary buildings and/or domes be used to contain contaminants that are disturbed during cleanup phases of note such as drilling, earthmoving and the like.

Response to Comment 28

Please see our response to comment 6 which we are hopeful will alleviate your concern on this matter.

Comment 29

There is a lack of dispersion modeling for migration of plumes of contamination that would also assist in the identification of source points of many of the contaminants in question.

Response to Comment 29

There is insufficient data to use a dispersion model to determine the sources of contaminant plumes at the 881 Hillside. The hydrogeology at the 881 Hillside Area is relatively complex and not adequately defined for use of a ground water model. Furthermore, it is unlikely a ground water model will provide information that cannot be ascertained through interpretation of ground water surface elevation maps together with contaminant contour maps.

Comment 30

I have a couple of comments submitted to me by Neils Schoenbeck that I would like to submit with mine. They have a question as to existing data about the integrity of the impermeable membrane in the french drain for the period of 20 years. What is the known lifetime of that membrane? What plans exist for the disposal of the material of the french drain itself when the cleanup is completed? I think there is a great deal of concern about the proximity of the 903 Pad in light of the resuspension and windblown resuspension reports from the repository, that the problems with the resuspension in this area are not being addressed that already exist in that area, sands remediation.

Response to Comment 30

Synthetic membranes have been in use at waste disposal sites for over 20 years, many of which have not shown leakage. EPA guidance suggest the expected life of a synthetic membrane is no longer than 30 years. If repairs are required to the french drain during the course of the interim action, they will be undertaken immediately. This will be outlined in the Operation and Maintenance manual. If necessary, the french drain will be completely rebuilt, if liner leakage is frequent. When remediation is complete, the french drain will be removed and disposed in accordance with all regulatory requirements. The treatment facility may be used for other ground water treatment purposes, or decommissioned in accordance with RCRA closure regulations and DOE Orders when it has no further utility. Please see our response to comment 6 addresses resuspension of plutonium contaminated dust.

COMMENTOR: W.A. Kemper, Rocky Flats Cleanup Commission

Comment 31

This plan is, as its title states, only an interim remedial action, not a cleanup. But is a first step and accordingly, I believe it should be supported unless seriously flawed. I found it somewhat difficult to read and possibly containing some small technical errors easily correctable, but nothing that would cause it to be rejected.

Response to Comment 31

The interim action is a cleanup because contaminated ground water will be removed from the Area and treated. We recognize there are some small technical errors in the plan, and do appreciate your support of this action. This interim action is a significant step in the remediation of the 881 Hillside Area. The technical errors in the report will be corrected, and a final plan will be available for your review.

Comment 32

There is some question whether 881 Hillside should have been chosen for the initial remedial action. Perhaps it is the area of greatest immediate concern, but it does appear that the danger from 881 Hillside is principally from volatile organic compounds (VOCs) whereas the public's greatest concern is with radionuclides. But the public should be aware the VOCs are also toxic and can cause problems such as attributed to Martin Marietta. The cost of implementing this interim remedial action will be about \$4.6 million. It will affect the removal of about 80 lb VOCs, 5 lb selenium, and 0.1×10^{-3} curie of radionuclides and other substances of lesser concern per year. More important, it should assure that seepage and drainage from 881 Hillside will present absolutely no risk to the drinking water supply.

Response to Comment 32

The 881 Hillside Area was chosen for initial investigation and cleanup because of the high concentrations of organic contaminants in the ground water, many of which are carcinogenic, and the proximity of the contamination to a major drainage that leads to Standley Lake. DOE is aware that the public's general perception is that highly radioactive contaminated sites and off-site areas are of higher interest and concern. However, in dealing with the 881 Hillside first, DOE is implementing a policy of contaminant source control in an area where there is the greatest potential future risk to the public.

Comment 33

The report would be easier to read had it been organized differently and a table of acronyms been included. For example, it is to readily clear "alternatives" whether measures being discussed are for water treatment or for containment and collection, nor which measures are recommended of those being considered. The final proposed system is shown in Figure 6-1.

Response to Comment 33

The organization of the document generally follows EPA guidance for the preparation of an Engineering Evaluation/Cost Analysis (EE/CA) as defined in the proposed National Contingency Plan. We agree, the organization could be improved but it was mutually agreed with EPA that the EE/CA guidance would be followed. The revised plan will contain a table of acronyms. Consideration will be given for a different organization in future reports.

Comment 34

The site numbers, p. 2-3, do not correspond to the numbers on Figure 2-2.

Response to Comment 34

We have reviewed the site numbers and the numbers on the figure and have noted that SWMU 177 is not located on the map. SWMU 177 was not shown on the map because it will be closed under the State of Colorado hazardous waste regulations and therefore is not included in this interim action. Please excuse this confusion. The final plan will note the location of SWMU 177.

Comment 35

The "description of surrounding land use and population density" minimizes the area at risk. Are there not schools and hospitals closer than 6 and 10 miles from the plant and ranches closer than 10 miles? I'd say they are right adjacent. (Ranch and farm areas) Several new housing subdivisions are within a few miles of the buffer zone. See Figure 2-3. A 5 mile radius takes in all of Broomfield, most of Westminster and part of Arvada.

Response to Comment 35

Please see our response to comment 11 which addresses your concern. This section of the plan will be updated in the final interim remedial action plan.

Comment 36

It may be noted that all the VOCs above tolerated concentrations (ARAR) are chlorinated hydrocarbons. Are there no other appreciable amounts of non-volatile organic compounds; dioxins, PCBs or other? Of the metals, only selenium seems to be of appreciable concern, except of course the radionuclides. More needs be known about these. How much is natural uranium? How much is background? And, how much cesium and other fission products exist, if any? If any fission products are detected, I would not expect that they were from world wide fallout.

Response to Comment 36

No other Hazardous Substance List or Target Compound List non-volatile organic compounds are present in appreciable amounts. Selenium is of greatest concern, although manganese and to a lesser extent nickel are also of concern. Uranium is the only radionuclide of concern at the 881 Hillside Area ground water. Depleted uranium which is used at Rocky Flats has a U^{234}/U^{238} activity ratio less than one whereas natural uranium has a ratio greater than one. The activity ratio for uranium in ground water at the 881 Hillside Area is always greater than 1 which suggest the uranium is natural; however, the concentrations are observed to be over 10 times background in some locations. Cesium 137 and strontium 89, 90 are radionuclides present in the environment due to fallout. There is insufficient data to determine if these radionuclides are above background in ground water at the 881 Hillside Area. The Phase III RI and background hydrogeochemical characterization will allow determination of whether these radionuclides are contaminants of the ground water. However, we note that an Independent Criticality Safety Assessment Team concluded in a report released in 1989, that there has not been a criticality at the Rocky Flats Plant. Their conclusion was based on review of radioactive cesium and strontium in soil and water, records of past operations, criticality procedural infractions, plant renovations, fires and radioactive exposures.

Comment 37

In tables 2-1, 2-2, and 2-3, 400 pCi/l is stated as background for tritium. How can there be a

background value for tritium since all is man made? The measured values for average tritium activity exceeds the average "gross" Beta activity by an order of magnitude. How can this be when all the tritium activity is Beta?

Response to Comment 37

We understand your confusion on this subject. The background value for tritium is simply the Minimum Detectable Activity for the analytical method, i.e., background concentrations of tritium are less than what can be measured. However, we do note that tritium is a naturally occurring isotope of hydrogen present in water and in the atmosphere. The gross beta value does not include tritium, i.e., tritium is associated with the water which is driven off prior to the analysis for gross beta.

Comment 38

If U (natural) content of the water to be treated is 15 pCi/l (p. 2-23, 2-27, and p. 4-26) and has an activity of 7×10^{-1} Ci/g. (See RFP response, p 12, to EPA 2/24/89) and most of this Uranium is absorbed on the strong base resin, this amounts to 285 g/yr. Will 28 cubic feet of the resin contain this for 30 years as stated? Quite reasonable to believe it should. 285 g/yr is only 0.6 lb/yr.

Response to Comment 38

Our calculations indicate 30 years to be a reasonable life of the resin.

Comment 39

Will French trench contain surface runoff in heavy rain?

Response to Comment 39

The french drain is not designed to intercept surface runoff at any time, i.e., it is covered. It is only designed to intercept ground water.

Comment 40

p. 4-49 Worker (and surrounding populace) protection requires that no radionuclides are released from the soil into the air and drift away.

Response to Comment 40

Please see our response to comment 6 that discusses your concern.

Comment 41

14,000 gallons of wastewater are generated per 100,000 gallons of water treated. What happens to this wastewater? See p. 4-28.

Response to Comment 41

As stated at the top of the paragraph, the Building 374 Process Waste Treatment System (a precipitation/flash evaporation process) will treat the regeneration waste. Waste regenerant will be transported to Building 374 by tanker truck.

Comment 42

P. 4-27. Does IR120 or IRA 94/402 remove Se? If not, and only the activated alumina absorbs the Selenium, a 50/50 split will not reduce the selenium to an ARAR level.

Response to Comment 42

IRA 94/402 removes selenium. It is the activated alumina that does not remove TDS. However, only one-third of the flow need be demineralized through the strong cation and anion system to achieve the TDS standard.

Comment 43

Will the Rohm & Haas IRA-402 resin remove any plutonium that might be present?

Response to Comment 43

Any plutonium that is present will be particulate in nature because of its very low solubility. Particulates will be removed by the influent filters, and the filters will be disposed off-site as a radioactive mixed waste. Plutonium would not be a problem in the effluent because of its very low solubility.

Comment 44

I am curious why old fuel oil tanks were filled with concrete rather than disposed of as scrap. Did they contain something more toxic than oil? See p. 2-3, site 4, 5.

Response to Comment 44

Filling tanks with concrete is a common practice for abandonment. It guarantees nothing else will be disposed in the tanks. We are not aware that the tanks contained anything else than oil.

Comment 45

Par. 2 of p. 2-1 states that the mission of the plant is fabrication of warhead components. I am left to wonder what else goes on in the plant that kilograms of plutonium, as reported in the press, were in the ducts.

Response to Comment 45

We recognize yours' and the public's concern regarding plutonium handling at the facility. However, the subject of plutonium operations is outside the scope of this interim remedial action plan.

COMMENTOR: Joseph Goldfield, P.E., Vice President, Rocky Flats Cleanup Commission

Comment 46

The problem is not stated until page 2-31. It should be up front.

Response to Comment 46

Please see our response to comment 33.

Comment 47

The plan should start with a summary and conclusions.

Response to Comment 47

We agree with you, but as stated in our response to comment 33, the EPA EE/CA guidance was agreed with EPA to be followed.

Comment 48

A section that defines the acronyms and initials designating agencies, laws, and many other items must be included.

Response to Comment 48

The regulatory climate pertaining to hazardous waste management and cleanup has created a preponderance of acronyms that are used routinely. We understand your frustration, and a table of acronyms will be provided in the final plan.

Comment 49

Table 3-1.2 - The ARAR for antimony is exceeded--0.0798>0.06.

Response to Comment 49

You are quite correct. This is a typographical error and will be corrected in the final plan.

Comment 50

Beryllium is extremely poisonous. In Table 3-22 why not set ARAR=0.005? In air maximum allowable concentrations for exposures to cadmium and selenium are 200 times greater than that for beryllium. Why is the concentration allowable in water set 10 times greater for beryllium than for either cadmium or selenium?

Response to Comment 50

The maximum allowable concentration for beryllium in air is 200 times lower than for cadmium and selenium because of the relatively more severe effects beryllium has on lung tissue. Therefore, the analogy is inappropriate for determining the allowable concentration in water.

Comment 51

In Tables 3-1.1 to 3-1.4, 29 ARARs are exceeded. When reducing them to acceptable limits, each one is considered as if there are no other dangerous materials present. In setting standards for the removal of air contaminants the presence of all contaminants are taken into account. The concentration of each one, after cleanup is divided by the maximum allowable concentration for that contaminant. The total of all the fractions cannot exceed one. Thus, even if each contaminant is brought down to an acceptable level, compliance is not achieved until all of the dangerous contaminant fractions with respect to the allowable maximum total less than one. Unless a similar method is used with water contaminants, synergistic effect are not accounted for.

Response to Comment 51

We are familiar with this methodology to account for additive effects. It is used routinely in risk assessments. However, the chemical specific ARARs identified for the 881 Hillside Area IM/IRA are largely CDH ground water standards or surface water standards for Woman Creek. There is no provision in the respective regulations for downward adjustment of these standards based on additive effects, i.e., compliance is achieved by meeting the chemical specific standards.

Comment 52

Table 4-1 gives the contaminant concentrations that are used as a basis for design of the removal systems. These values are lower than the maximum concentrations given in Tables 3-1.1 to 3-1.4. Why aren't the higher values used for system design? If average values are being used for design, that is dead wrong. It means that for about half of the time, type system is underdesigned.

Response to Comment 52

Flow is the most critical design parameter for sizing a treatment system. We believe the flow estimates for the IM/IRA to be conservative and thus the treatment system is adequately sized. The use of maximum concentrations versus average concentrations for contaminants having the greatest impact on the treatment operation, i.e., organics and total dissolved solids (major ions), would not change the design because these contaminants do not display high variability. The treatment system can handle the maximum expected loading of contaminants.

Comment 53

Page 4-10 says that carbon beds that must be discarded become a candidate for discharge at the Nevada test site. What radionuclides are being collected that pose such danger that the carbon must be shipped to Nevada? The report does not make this clear.

Response to Comment 53

On page 4-41, first paragraph, it is stated that uranium, either naturally occurring or from past waste disposal, will likely adsorb to the activated carbon. Uranium is the only radionuclide in the alluvial ground water at the 881 Hillside Area that is above estimated background concentrations. Thus, there is a concern over the radioactivity of the carbon increasing over time with the continued use of the carbon.

Comment 54

(See page 4-17)-A preheater will not "dehumidify" the air stripper emissions. If dehumidification is required a different process than preheating is needed. Heating the air will reduce the relative humidity.

Response to Comment 54

Dehumidify may be a poor choice of words. It is only necessary to reduce the relative humidity to prevent water from condensing on the carbon. The wording of this statement will be changed in the final interim remedial action plan.

Comment 55

Selenium has an ARAR of 0.01 mg/l but its concentration is 3.2 mg/l in the water stream that must be treated (320 times as much). Similarly total dissolved solids are 2374 mg/l but the ARAR is 400 mg/l - less than 20% of the amount to be treated. If only half the water flow is treated for each of the aforementioned constituents how can the required concentrations be attained?

Response to Comment 55

The expected influent concentration of total dissolved solids is 718 mg/l, not 2374 mg/l which is the maximum observed total dissolved solids concentration in the ground water. The influent concentration is significantly less than the maximum because the influent represents a blend of low total dissolved solids ground water from the footing drain with collected ground water from the french drain. Because both the activated alumina and two stage demineralizer remove selenium but the activated alumina does not remove total dissolved solids, it is only necessary to treat approximately half the flow with the two stage demineralizer to achieve the ARAR for total dissolved solids.

Comment 56

The treatment system is designed to treat 30 gpm for 8 hours per day. $30 \text{ gpm} \times 60 \text{ min/hr} \times 8 \text{ hrs/day} \times 350 \text{ days per year} = 5,000,000 \text{ gals/yr}$. The wall to stop contaminated water flow is 2100 feet long. If an area 300 feet wide is drained and the precipitation is 14 inches per year, the gallons per year that will drain are $300 \text{ feet} \times 2100 \text{ feet} \times 14/12 \text{ feet} \times 7.5 \text{ gals/cu ft} = 5,500,000 \text{ gals/year}$. The capacity of the system is almost exactly equal to the water draining from the area 300 feet above the retaining wall. If a greater area must be drained or if the wall must be extended the system may have inadequate capacity.

Response to Comment 56

Your calculation of the expected flow at the french drain is a good theoretical method. However, you should note that of the 14" of precipitation falling on the 881 Hillside Area, much of this will runoff or be evaporated. Nevertheless, if additional capacity is required, it will be necessary to operate the system beyond 8 hours per day. The actual capacity of the system is 2 to 3 times what is estimated to be required.

Comment 57

The key problem with the proposed interim plan is that it must be regarded as temporary. Until the sources of the contamination in the burial ground surrounding building 881 are completely removed, the people drinking water downstream of the ground water flow (drawing water from Woman's Creek) are in danger of getting contaminated drinking water.

Response to Comment 57

The IM/IRA specifically protects downstream users of alluvial ground water or surface water of Woman Creek. The collection of the footing drain flow and the interception of the contaminated alluvial ground water by the french drain will provide positive cutoff of contaminant migration in these media. The IM/IRA will operate until ARARs are achieved for ground water and/or a final remedy is implemented.

Comment 58

On p. 2-25 dioctyl phthalate (DOP) is described as the most prominent volatile organic contaminant of the 881 Hillside. DOP is principally used to test HEPA filters. Does the presence of DOP annunciate the presence of spent HEPA filters grossly contaminated with plutonium? If it does, then the validity of the "Interim Remedial Action Plan" is called into question.

Response to Comment 58

The validity of the IM/IRA is based on our understanding of ground water chemistry and flow, and the effectiveness of the proposed treatment system. Bis(2-ethyl hexyl)phthalate is cited in the text as being prevalent in the soil. This is not the same as di-n-octyl phthalate which was rarely present in the soils at the 881 Hillside Area. Bis(2-ethyl hexyl)phthalate is a common plasticizer that is likely to be found wherever plastics have been used. We believe, although we have not proven this hypothesis, that bis(2-ethyl hexyl)phthalate is present in the soil samples because of handling the samples with plastic gloves. We have no reason to believe, based on historical information, that HEPA filters were disposed at the 881 Hillside Area. Also, the remedial investigation information does not indicate the presence of buried HEPA filters.

Comment 59

As near as I can tell, the plan estimates the expenditure of about \$3 million in capitol funds in the next 1-1/2 year - about \$2 million per year. We have heard estimates of about \$1 billion to clean up the contamination at the Rocky Flats Plant. At the rate we are moving, 500 years is a good estimate of how long it will take.

Response to Comment 59

The 881 Hillside IM/IRA is only one of many parallel on-going activities that are pertinent to cleanup of the Rocky Flats Plant and that are included in the \$1 billion figure. In fiscal year 1990, approximately \$65 million dollars is budgeted for environmental restoration activities at the Rocky Flats Plant.

COMMENTOR: Gale Biggs, Ph.D., Rocky Flats Cleanup Commission

Comment 60

In the cleaning of the ground water, the various methods described do not include the possibility of plutonium emissions since the drilling has not detected significant quantities of this metal. However, this metal may not migrate with the ground water if it attaches itself to soil particulates. This could also account for the small amounts detected in the sampled water. When remedial activities start, the amount, pressure and chemical composition of the liquid passing through the soil as part of the in-situ cleaning process could capture the plutonium, bring it to the surface, and produce measurable quantities in the processed water. A design for accommodating this possibility needs to be included in the program. Otherwise the plutonium could be released into the atmosphere (perhaps undetected) since no provisions were made for its presence.

Response to Comment 60

Please see our response to comment 43.

Comment 61

The possibility exists that a source of air borne plutonium from the area is due to refloatation from the soil. It could be that some of this plutonium is from the 903 pad, however, the highest measurements are east and southeast of 881. Disruption of the ground for mitigation could release the plutonium contaminated soil into the air. There is no mention in the plan for mitigation of this possibility. A very thorough dust control plan needs to be established -even to the degree of enclosing the earth moving activities. Many techniques have been established for asbestos control to the environment; surely this plutonium remedial action could adopt some of these techniques.

Response to Comment 61

Please see our response to comment 6.

COMMENTOR: Bini Abbott

Comment 62

I have three main comments and first is on your inaccurate measuring of distances from Rocky Flats to the neighboring communities. In the first place, on page 2-5, you're talking about surround land use and you state that the nearest educational facility is the Sierra Elementary School, which is six miles southeast of Rocky Flats Plant. If you look at the map, Sierra School is the red dot way over here. That is not the nearest school. Sierra was built about 18 years ago. However, nine years ago Witt Elementary was built, which is about four miles, three and a half miles from the boundary of Rocky Flats. Standley Lake High School is closer. Lucas Elementary was just built. Moore Junior High was built in 1980 and is also closer to Rocky Flats.

I also feel that you should not measure from the center of the Rocky Flats Plant any more than you would measure from the center of a beehive that is a half-mile by a half-mile, and then say the only danger is coming from the very center of the beehive. You need to, I think, measure from the Rocky Flats boundary when you're stating what is close. We live way closer than any of your maps show.

On that same page, page 2-5, you talk about some of the plants that are near Rocky Flats and you have omitted floral products, which has had two fires and produced a lot of problems, also. Then your bottom paragraph is ridiculous in my estimation. You're talking about agricultural statistics in 1976. Why would we care how many pigs and so on there were in the 1976 area? You could get updated information.

You also have a map, which is Figure 2-3, but not a page number, and it's talking about land use in the vicinity of Rocky Flats Plant. It was taken after a Rockwell International map done in 1986. Who knows what they took their map from, maybe something done prior to then. It is absolutely inaccurate on where there's industry, where there are housing area, and it should be updated.

How can we have faith in your credibility when you can't even put the background information down accurately? I'm aware that the chemists and so on who are doing the other reports did not do this part, but this is sloppy and should not be left that way.

Response to Comment 62

Thank you for your comments. We have updated this information as indicated in our response to comment 11.

COMMENTOR: Barb Moore

Comment 63

I have just a few objections to the remedial action plan. I have a problem with that there is no provision for extracting plutonium from the water. I understand that now that has not shown up, but what is going to happen if it does show up? Do we have a plan for that? I think it is -- should be planned for. I think it is likely that plutonium could show up with the amounts of plutonium that have been released on Hillside 881. I think that should be planned for.

Response to Comment 63

Please see our response to comment 43.

Comment 64

I'd like to know how the cleanup of the cleanup operations are going to be handled. Are the French Drains and all this piping going to be left in place afterwards, or is it going to be cleaned up? And if it's going to be cleaned up, how is that going to happen?

Response to Comment 64

Please see our response to comment 30.

Comment 65

And what if the water does not prove to be safe that you are extracting? Do we have facilities to store this water? If so, where is that going to be stored? I understand that we are going to reach our capacity in the springtime. This cleanup operation isn't happening for another year. Where are we going to store this extracted waste and the water should it become necessary?

Response to Comment 65

We do not understand your reference to reaching storage capacity in the springtime but believe you may be confusing this with other Rocky Flats Plant waste storage issues not connected with this action. The design of the IM/IRA calls for two effluent tanks each with one week of storage capacity. Furthermore, the capacity of the treatment system is 2 -3 times the expected influent flow. In consideration of this treatment and storage capacity, we feel it is reasonable that any operational difficulties encountered with the treatment plant can be corrected in sufficient time such that discharge of contaminated water is avoided. In addition, a carbon "polishing" system may be installed if there are any operational difficulties with the UV/Peroxide system. Ground water will not be collected from the french drain and Building 881 footing drain until after startup testing operations are performed and the treatment system is shown to be operating according to specification. In the meantime, we note that organic contaminants are migrating very slowly in the ground water, and the footing drain discharge may contain very low concentrations of organics (recent results show PCE at only 8 ppb). Organic contaminants have never been detected in Pond C-2 where the footing drain discharge ultimately flows. Furthermore, Pond C-2 is monitored before discharge to assure the water quality is acceptable as dictated by the plants NPDES permit. In light of this, you should not be concerned about contamination being released off the Rocky Flats Plant property before the interim action construction is completed.

Comment 66

I understand there's, you know, from what I've been able to figure, over 50,000 square feet of contaminated land area on Hillside 881. I have a real problem with heavy machinery driving over this area and resuspending the particles into the air. During past cleanup operations air monitoring levels, plutonium levels have reached the state standards and, at times, have exceeded the state standards. What air monitoring is going to happen during the cleanup and at what point will cleanup stop should we exceed those air monitoring standards?

Response to Comment 66

Please see our response to comment 6.

Comment 67

*I am confused that this plan has come about, in my eyes, fairly rapidly. In last February, 1989, Troy Wade, in testimony before a Senate hearing, was telling us that Rocky Flats could never be -
- may never be cleaned up. When Senator Tim Wirth asked him about the ground water contamination, Wade acknowledged that the technology does not exist for cleaning up the ground water or stopping the contamination. I want to know, you know, what drastic measures have occurred since February, 1989, to make this now a safe and feasible plan?*

Response to Comment 67

We do not know what information Mr. Wade was basing his comments on. However, we are certain that the proposed IM/IRA will be effective in significantly reducing contaminant migration in the alluvial ground water system at the 881 Hillside Area, and in removing the contaminants from the extracted ground water. DOE also recognizes that the public must be reasonably convinced of the feasibility and legitimacy of this action.

Comment 68

At the last meeting here at Front Range Community College, I may have misinterpreted the comments, but the way I interpret it is that because of strong public objection, may delay the cleanup of the ground water on Hillside 881, would be the fault of the people who drafted the plan. We need to have a plan that is acceptable to the public and that will not endanger our health. I think our priorities should lie with the people and the public safety, and not with how many dollars this is going to cost us to clean this up.

Response to Comment 68

Strong public opposition to the plan would delay the IM/IRA. However, DOE is committed to expediting the IM/IRA according to a plan that is first and foremost protective of the public health and environment. We feel that the plan that has been reviewed by the public and this responsiveness summary demonstrates that commitment.

COMMENTOR: Mel Wright

Comment 69

First, comments against Rockwell--not against Rockwell. I appreciate you trying to clean it up. Leaving that stuff there is nothing but a time bomb and it's going to get us. Any attempt to do something is better than sitting on our hands. However, after going to the hazardous waste seminar Monday and Tuesday, the manufacturer of this ozone peroxide cleanup says they're having a lot of problems it won't touch, carbon tetrachloride, and it won't touch some of the unsaturated chlorides. It works extremely well on trichloroethylene and the some chlorinated solvents, but at least it's an attempt. At least it's something that's going to remove the great majority of the contaminants as I see from the list. Just realize it will not work on carbon tet at all, and probably will not work on the tetrachloroethylene, so you're probably going to have to do some air-stripping or carbon filtration, something along that line as an after-through. In other words, you don't want to saturate your carbon filters, so you basically will need an in-series type thing.

Response to Comment 69

The UV/Peroxide equipment specification calls for the reduction of the expected influent concentrations of both carbon tetrachloride and tetrachloroethylene to achieve the effluent standards, i.e., the vendor of the equipment must guarantee the equipment will meet these performance criteria. Furthermore, one vendor, Peroxidation Systems, notes that there is a substantial body of evidence that indicates saturated compounds can be treated with the UV/peroxidation process. The evidence indicates that longer residence times are required to treat saturated organics relative to unsaturated organics. Data presented in 1987 (Hager, Loven, and Giggy, Chemical Oxidation Destruction of Organic Contaminants in Groundwater, HMCRI National Conference and Exhibition, November, 1987), indicates that 1,200 mg/l of carbon tetrachloride was reduced to 0.3 mg/l with a reaction time of 30 minutes. The Hager paper also noted that 705 µg/l of tetrachloroethylene was reduced to non-detectable limits in just 2.5 minutes. The longer residence time required for treating saturated compounds translates into higher operating costs but no reduction in protection of human health and safety.

Comment 70

One other thing, I really didn't get to see your total diagram, but at one point your treated water was going to come out. You were going to test it. If it failed the test you are going to pump it back in, in line, and in some ways it almost sounds like dilution. I'd rather see you set up another second set of either the ozone treatment or some more carbon filters. Possibility put some secondary backup systems; in other words, if you have breakthrough, don't resend it back through kind of as a dilution scheme, but go on down the line.

Response to Comment 70

Indeed the influent would be diluted by recycling the effluent through the treatment system. However, it is impossible for this effluent to dilute the influent to meet ARARs without further treatment. Nevertheless, your comment is well taken. In order to minimize any operational difficulties, a carbon "polishing" system may be installed downstream of the ion exchange system. This redundancy would further facilitate smooth operation of the facility.

Comment 71

I'm just going to keep it at that for your comments, and some comments to my concerned citizens. First, even though this is an interim cleanup, hopefully you're going to follow the OSHA rules. 1910.20, it very well defines exactly what these guys have to do, how they monitor, what kind of equipment the people have to wear, what kind of dust they can stir up, and all you have to do is you can call up OSHA and ask for 1910.20. It'll tell you everything you want to know about what these

guys have to do. Hopefully, you will follow it.

Okay. Even though it's an interim cleanup, by law, a lot of times if you're doing interim, EPA allows you to bypass or not follow a lot of the rules that a Super Fund site would, or a normal cleanup facility would. Hopefully you're going to follow 1910.20, and I highly suggest everybody in the audience call up OSHA and ask for that paper, and it will answer--there was about three people who had questions about that. It will answer all your questions. All you've got to do is ask these guys are they going to follow that.

Let's see, the second thing, I'm concerned that it seems like the major concern of the audience is, "Let's don't do anything. We'll just leave it there." My complaint is, we've put it there. It's there in concentrated form. Let's get rid of it. You guys are worrying about stirring up a little dust. What do you think wind storms do? What do you think--where does the rainwater go? It washes off the property. You guys are probably more contaminated by what the wind blows up, what the rainwater washes off than these guys will ever stir up. Hopefully they will reduce it, you know, put up--hopefully, you'll take this one guy's comments, maybe put a dome over it, a simple, cheap dome. You'll water it down, do everything possible to reduce it, but you know and I know as an environmental chemist, these guys are more at risk from what the environment is throwing out to them than you guys will stir up in the cleanup.

We've got to start trying to remove something. If you leave it there, it's a time bomb and it will get you. So my comment is, first, I appreciate that we're going to try something, work it out, realizing it is an experiment, but hopefully intelligence allows some thought to go into it. You work at it, you improve it, but at least do something.

Again, send away for the information and let's try and work together. I want to protect my life and my environment, and the way to do it is to help people solve the problem and understand it. So send away for the literature and go from there. Remember, the ozone thing doesn't work on the carbon tet, and that's it. Thank you very much.

Response to Comment 71

We fully intend to comply with OSHA regulations. We appreciate your support on this project.

COMMENTOR: Mr. Reynolds

Comment 72

My concern is--one is resuspension and on-site and off-site Hill 881, as well as some of the areas that I've been told about that have a fairly high radioactivity just east of Indiana. Is there any particular reason why we couldn't be using some of the adhesive sprayed currently in some of the core sample sites or some of the core sites to keep the resuspension down in this area, which is only about, what, a mile and a half, two miles from a major high school that was just fairly recently built and a very large population in that area. Is there any particular reason why we couldn't be putting something down to keep that down? I understand that they're taking measures to, I've been told, plow under as well as re-vegetate, but some of this adhesive material that I've read about that they've been spraying in these areas for the core sampling have been used, and why not use it there?

Response to Comment 72

The plowing and revegetating activities refer to the soil remediation being conducted just east of Indiana Street. We appreciate your concern, however, that project is not part of this interim action and is therefore outside the scope of the plan and this response to comments. With regard to the 881 Hillside Area, please see our response to comment 6.

Comment 73

Also, in the--this may not--I may be out of order in asking this questions, but with the recent accident yesterday of the aircraft accident and previous to that, the air show which we had a large number of aircraft, is there--especially now with the--all these boxcars out there and the high potential of--or high exposure I'd suggest that we've had probably prior to the--and I think you call it the EPA's evaluation of accidents. I don't know if that was considered at that time; that is, all the boxcars we have out there now. But is there any consideration in the remedial time of looking at redirecting traffic or--and I don't know how you do that with a major airport right next to it, but on the other hand, is that being considered? And if it's not, I'd sure appreciate it if it would be.

Response to Comment 73

We appreciate your concern regarding the potential for these accidents but we note that the air space above the Rocky Flats Plant is already restricted.

WRITTEN COMMENTS: Annette Barnard, Manager of Water Quality, City of Thornton

Comment 74

The City of Thornton would like to thank the Colorado Department of Health and the Department of Energy (DOE) for the opportunity to submit comments on the Proposed Interim Measures/Interim Remedial Action Plan and Decision Document for the 881 Hillside Area. The City believes that the option selected by Rockwell International, the UV/peroxide and ion exchange treatment system, is the appropriate solution because it accomplishes complete destruction of the contaminants without formation of additional hazardous wastes or other byproducts. In addition, we feel that the French Drain collection system is an excellent choice for collection of the groundwater.

Response to Comment 74

We appreciate your support.

Comment 75

The French Drain should be extended on the east end to include coverage of Solid Waste Management Unit (SWMU) 119.2 which was used for barrel storage.

Response to Comment 75

As discussed on page 6-1, second paragraph, if the bedrock lithology verification program indicates the presence of saturated colluvial material downgradient of SWMU 119.2, the french drain will be extended to collect ground water in this area.

Comment 76

A detailed operating procedure should be developed to establish an appropriate water quality monitoring system and to define treatment criteria and standards.

Response to Comment 76

Treatment criteria and standards are defined in the plan. An Operation and Maintenance manual will be prepared for the facility which will outline the monitoring requirements. This manual will be available for public review before the treatment system is operational.

Comment 77

In the interest of public relations and public safety a study should be funded to determine an appropriate collection system to take Pond C-2 water and runoff from the site to prevent contamination of the drinking water supply for the Cities of Thornton, Northglenn and Westminster.

Response to Comment 77

DOE is investigating alternatives to discharge of Plant runoff via Pond C-2 to the Woman Creek drainage. However, we would like to point out that all discharges from Pond C-2 will be monitored in accordance with the Plant's National Pollutant Discharge Elimination System Permit. Water that does not meet the surface water standards for Woman Creek will not be discharged. Please see our response to comment 1.

Comment 78

A permanent system should be developed to intercept flow from Woman Creek and divert it around Standley Lake to protect public health from contamination which may not be known or apparent at this time.

Response to Comment 78

Please see our responses to comments 1 and 77.

WRITTEN COMMENTS: Environmental Protection Agency

Comment 79

Section 2.1.6.2. In light of the data validation study performed by Argonne National Laboratory, conservative analyses of the soils data must be summarized for inclusion within this report. Specifically, until further field work is conducted at the 881 Hillside to verify or refute the presence of both volatile and semi-volatile constituents, the previous soils evaluation must be presented. More than 3 of the 23 boreholes were contaminated and the soils were contaminated with more than PCE, TCE and 1,1,1-TCA.

Response to Comment 79

The text will be revised in the final plan to simply summarize the data and discuss its limitations. References to risk will be deleted.

Comment 80

Section 2.1.6.3. It should be stated that recent valid sampling of the ponds within Woman Creek indicate that there are no VOCs present.

Response to Comment 80

This addition will be made in the final plan.

Comment 81

Section 3.2. The schedule presented must reflect the extension of the public comment period. The procurement dates for the Ion Exchange System seem to be in error.

Response to Comment 81

This is a typographical error that will be corrected in the final plan. Also, the extension of the public comment period, and the response to public comments and finalization of the plan will be reflected in the new schedule. This will alter the overall schedule for construction and startup of the IM/IRA. The revised schedule is provided in Section 3 of the final plan.

Comment 82

Section 3.3. The chemical specific ARAR for gross beta is 4 mrem/yr (a National Interim Primary Drinking Water Regulation) or 50 pCi/l (a SDWA MCL), whichever is more stringent.

Response to Comment 82

Actually, 50 pCi/l is simply a criterion above which it is necessary to analyze specific man-made beta emitting isotopes to assess if the 4 mrem/yr standard is exceeded. The change will be made in the final plan.

Comment 83

Section 3.3.1. The Chemical Specific ARAR for antimony is exceeded. It appears that the Chemical Specific ARAR for nitrate is exceeded. The RCRA Subpart F standard for 1,2 Dichloroethane is 5 ppb. This is a final MCL.

Response to Comment 83

Antimony and nitrate do exceed ARAR. These were typographical errors that will be corrected in the final plan. As noted in Table 3-2.1, 5 ppb is the RCRA Subpart F, CDH ground water, CDH surface water, and MCL standard.

Comment 84

Section 4.3. Table 4-1 presents the basis for design of the 881 Hillside treatment technology as based on a flow weighted average of the footing drain and alluvial groundwater collected by the french drain. Is the source well included in the design basis for the treatment technology?

Response to Comment 84

The source well has not been included because it would represent double accounting of contamination. Well 9-74 and 43-87 are included in the computation of the expected ground water chemistry of alluvial ground water collected by the french drain. Also, the source well will be pumped and the discharge treated prior to the french drain being placed into service. By the time the french drain is in service, it is expected that the source well will have lower contaminant concentrations and produce a low steady flow (estimated below 1 gpm). This should not significantly affect the influent chemical characteristics, at least relative to the computed influent characteristics.

Comment 85

Section 4.5.1.1. Figure 4-9 shows the 6" perforated pipe placed above the drain sump. The top of the sump shall be located approximately two feet below the interface of the 10^{-6} cm/s hydraulic conductivity bedrock and bedrock or alluvial soils having greater than 10^{-6} cm/sec hydraulic conductivity. The perforated pipe should be placed so that liquid cannot accumulate above the level of the lined sump, i.e. the top of the pipe should be placed below the top of the sump.

Response to Comment 85

We agree, and the changes will be made in the final plan.

Comment 86

Section 4.5.3.2. The last paragraph states this action is a removal. This action is an IRA. Delete this statement.

Response to Comment 86

This is a typographical error resulting from the original draft plan referring to the IM/IRA as a removal action. The terminology will be deleted.

Comment 87

Section 6.0. As the soil boring program is scheduled for mid-October through mid-January, the driest time of the year, placement and frequent monitoring of permanent piezometers downgradient of SWMU 119.2 is recommended to evaluate the saturated or unsaturated conditions downgradient of the site.

Response to Comment 87

The schedule for the soil boring program has been moved back for technical and administrative reasons. It will now be conducted in the late winter/early spring.

Comment 88

It should be noted that the 15 feet into bedrock calculation for interception of dipping sandstones is dependent on the relative elevation of the top of bedrock. If the adjacent western borehole bedrock elevation is lower than the elevation of bedrock in the borehole being drilled, 15 foot penetration into bedrock may not intercept a dipping sandstone identified in the adjacent borehole.

Response to Comment 88

Given the 15 foot depth was estimated based on a dip of 7°, and the current estimate of dip is 1° to 2°, intercepting potentially subcropping sandstones with a penetration depth of 15 feet is almost certain regardless of differences in the top of bedrock elevations.

Comment 89

It might be prudent to maintain and archive the bedrock cores for potential future submittal for laboratory permeability testing. This contingency could be used if the in-situ permeability testing proposed does not generate acceptable information.

Response to Comment 89

The suggestion is a good one and will be considered.

D. REMAINING CONCERNS

All issues pertaining to the proposed interim action have been resolved by this Responsiveness Summary or the final interim action plan. The only issue that remains unresolved is the mixed public opinion regarding routing Woman Creek flow around Standley Lake. The issue, however, is not pertinent to the 881 Hillside Area interim action.

ATTACHMENT
COMMUNITY RELATIONS WORK PLAN

**COMMUNITY RELATIONS
WORK PLAN
SUBMITTED TO EPA, REGION VIII**

by

The Department of Energy, Rocky Flats Office

October 28, 1989

COMMUNITY RELATIONS PLAN
U.S. Department of Energy, Rocky Flats Office
October 28, 1989

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) requires that a Community Relations Plan be developed if a facility is placed on the Environmental Protection Agency's (EPA) National Priorities List (NPL - Superfund). In September of 1989, The Rocky Flats Plant, owned by the Department of Energy, was placed on the NPL by the EPA. Once a site is added to the NPL, a Community Relations Plan must be prepared for removals (cleanup sites) lasting longer than 45 calendar days. The following is the proposed work plan for the Rocky Flats Community Relations Plan and is divided accordingly:

1. Content:

- Purpose of the Community Relations Plan
- Historical Geographical and Technical Site History
- Community Background
- Key Community Concerns (derived from interviews)
- History of Community Involvement (derived from media clips)
- Community Relations Strategies (required and suggested by EPA's Community Relations in Superfund: A Handbook)
- Schedule of Community Relations Activities
- Procedure for Administrative Record and Locations
- Repository Information (content and locations)
- Remedial Investigations/Feasibility Studies (RI/FS) Process and General Remediation Information and Procedures
- Required Public Comment Procedures and Time Periods
- Mailing List of Key Contacts and Interested Parties
- Information on Determining Location of Public Meetings, News Conferences, Presentations and Workshops

2. Goals and Objectives:

- The Community Relations Plan (CRP) will provide in document form accurate, timely, and understandable information, and steps the public can take to participate in decisions regarding cleanup activities at the Rocky Flats Plant. The CRP will allow the public the opportunity to learn about the Site, the Superfund program and to provide input on technical decisions during the RI/FS process prior to remedial field work.
- The CRP will continuously inform the public of planned and/or ongoing remedial cleanup activities at the Plant. Throughout all of the cleanup processes it will serve as a blueprint outlining the timing of those

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activities and the public's role.

- The CRP will establish a positive working relationship among the public, the Department of Energy (DOE), the EPA, the Colorado Department of Health (CDH), and Plant personnel. This communication will focus on and resolve any past conflict and avoid any future miscommunications.

3. The Design of the CRP:

- The design of the CRP will follow the guidance and regulations provided in EPA's Community Relations in Superfund: A Handbook, the DOE, and CDH regulations.
- The design of the CRP will include input by the public through surveys and extensive community interviews conducted by the CRP Coordinator and staff, Plant public information staff, and Plant technical staff (when appropriate).
- The proposed final draft of the CRP will be developed by the CRP Coordinator and reviewed by the operating contractor, DOE, EPA, and CDH personnel. After review of the document by these agencies the CRP will be subject to the required public comment period.
- Following guidelines established by applicable regulatory agencies for community relations activities related to cleanup and remedial investigations, the CRP will also be subject to continuous revisions for specific sites undergoing remedial action at the Plant. Under these guidelines, the CRP will be perceived as a "living document" and the public will be provided the opportunity for input throughout the process.

4. Community Concerns:

- Prior to the writing of the proposed CRP, extensive interviews will be conducted. Citizens will have the opportunity to participate through public meetings, face-to-face interviews, informal group meetings and workshops. Groups to be targeted for interviews are discussed in Section 6. Based on existing historical information, initial concerns to be explored, but not limited to, are: real or perceived health threats from the production at the Plant; environmental concerns; levels of public technical knowledge; economic issues such as property values, income tax bases and revenues; and the credibility of involved government agencies.
- The goal of community involvement in the CRP will be to include and inform the public through accurate information and communication regarding cleanup activities, and to develop trust and respect between the surrounding communities, the operating contractor, and the appropriate agencies.
- The strategy to be used for gathering information on current community concerns through the interviewing process will include:

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- Development of an interviewing team(s) who will be knowledgeable, empathetic, non-threatening and know site background and community history.
- Prior to interviewing, the team will determine a cross-section of the public to interview. These groups and persons will be derived from mailing lists and correspondence files provided by the DOE, EPA, CDH, and the Plant. It is anticipated that once the interviewing process begins, interviewees will suggest other groups or persons who may wish to provide input.
- The interviewing team(s) will divide the list of interviewees and, based on the team's expertise, determine who will target certain groups and/or areas.
- Times and locations for interviews will be arranged at least seven to ten days prior to the interview. Confirmation telephone calls will be made.
- Prior to going into the field, the interview team(s) will outline the purpose of the CRP, organize questions, and practice diplomatic responses to difficult questions.
- The media will be contacted and briefed on the development of the CRP by personnel selected by the operating contractor. This briefing will continue throughout the CRP process, maintaining consistency and clarity at all times.
- The media will serve as a successful tool for the CRP as the interviewing team(s) and appropriate agency personnel will concentrate on building good media relations through open communication, updated information, and easy accessibility.

5. Activities:

Activities included in the CRP will be determined by the EPA guidelines as set forth in the Community Relations in Superfund: A Handbook. It is anticipated that additional activities will result from community interviews; however, history shows that the following activities will occur:

- Maintaining open lines of communication with interested parties. The CRP Coordinator and appropriate agency personnel will continue to make themselves available to talk to interested persons about environmental issues and concerns. This policy of open communication will continue during the entire CRP process and will include follow-up. The CRP Coordinator and agency personnel will also participate in meetings to keep the public informed about technical and community relations activities.
- Fact sheets, informational updates, and technical summaries will be

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prepared, kept current, and made available to the public through the Plant Public Information Department and repositories on a regular basis. A thorough mailing and contact list will be established and maintained. These lists will be kept current and expanded as remedial projects progress to provide information to all interested parties.

- News releases will be prepared for the local media. Because the local media are the source of information for many of the people queried, news releases will be provided to newspapers, television, and radio stations to announce significant findings and/or milestones and to notify the community of public meetings.
- Administrative records will be kept on site and project information and will be maintained at information repositories. The CRP Coordinator or his/her designee will ensure accuracy by keeping the information up to date at the repositories. The information in the administrative record will focus on remedial cleanup activities at the Plant and will be available for public review and comment. Although at least four exist, additional repositories may be established.
- Informal and formal public meetings with interested groups and area residents will be held with required advanced notice followed by a required comment period. These meetings will provide information on specific projects at the Plant, and appropriate agency personnel will respond to concerns, including those of a technical nature. Public meetings will be scheduled in relation to each remedial cleanup project. Some of these meetings may take the form of an "open house" featuring experts in a variety of fields.
- The opportunity for public comment will be welcomed. Interested groups and citizens will be encouraged to comment verbally or in written form on remedial investigations, feasibility studies, and other major reports as they relate to specific cleanup projects. Sufficient time is required for advanced notice of the comment periods to allow adequate time for comment. A minimum of 60 days will be allowed for public comment on preferred alternatives for remedial action at the Plant.
- As the CRP will address CERCLA and Resource Conservation and Recovery Act (RCRA) issues, the CRP Coordinator and Plant personnel will work closely and cooperatively with DOE, EPA and CDH.
- Responsiveness summaries will be prepared which will summarize significant public comments and concerns raised before and during the public comment period on draft feasibility studies. The Responsiveness Summary is required as part of the Record of Decision (ROD) and Corrective Action Decision (CAD) for each remedial cleanup site. It will document how citizen comments were considered throughout the decision-making process.
- Newspaper notices will be published to inform the public that the ROD

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- Administrative records will be kept on site and project information and will be maintained at information repositories. The CRP Coordinator or designee will ensure accuracy by keeping the information up to date at the repositories.

The information in the administrative record will focus on remedial cleanup activities at the Plant and will be available for public review and comment. Although at least four exist, additional repositories may be established.

- Informal and formal public meetings with interested groups and area residents will be held with required advanced notice followed by a required comment period. These meetings will provide information on specific projects at the Plant, and appropriate agency personnel will respond to concerns, including those of a technical nature. Public meetings will be scheduled in relation to each remedial cleanup project. Some of these meetings may take the form of an "open house" featuring experts in a variety of fields.
- The opportunity for public comment will be welcomed. Interested groups and citizens will be encouraged to comment verbally or in written form on remedial investigations, feasibility studies, and other major reports as they relate to specific cleanup projects. Sufficient time is required for advanced notice of the comment periods to allow adequate time for comment. A minimum of 60 days will be allowed for public comment on preferred alternatives for remedial action at the Plant.
- As the CRP will address CERCLA and Resource Conservation and Recovery Act (RCRA) issues, the CRP Coordinator and Plant personnel will work closely and cooperatively with DOE, EPA and CDH.
- Responsiveness summaries will be prepared which will summarize significant public comments and concerns raised before and during the public comment period on draft feasibility studies. The Responsiveness Summary is required as part of the Record of Decision (ROD) and Corrective Action Decision (CAD) for each remedial cleanup site. It will document how citizen comments were considered throughout the decision-making process.

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or CAD is signed and of the availability of the final remedial action plan selected. These notices will be placed in major local newspapers of general circulation after the remedy has been selected and the ROD or CAD is signed, but before commencement of any remedial activities.

In summary, open communication with concerned citizens and groups, regular public meetings and open houses, informal group meetings, and public comment periods on major reports are the primary activities of the CRP for the Plant.

6. Groups Identified to Interview for Comments to be Included in the CRP:

- Elected and/or appointed officials:
 - Governor's Office
 - Congressional delegation
 - Mayors, City Managers, select Council members and Legislators of the surrounding area
- Educators
- Rocky Flats Environmental Monitoring Council
- Chambers of Commerce in surrounding area
- Civic groups in surrounding Plant area
- Environmental groups
- Rocky Flats Cleanup Commission
- Church groups
- Industrial groups
- Area reporters
- Union employees
- Local landowners
- Directors of area homeowners' associations
- Area agricultural associations
- Area editorial boards

It is anticipated that this list of groups will be expanded once the interviewing process begins.

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7. Project Schedule:

A CRP will be prepared according to the following schedules:

<u>Early Start</u>	<u>Early Finish</u>	<u>Activity</u>
11/1/89	11/14/89	Community Survey Plan (CSP) scoping with EPA and CDH
11/15/89	12/15/89	Draft Community Survey Plan (CSP)
12/18/89	1/23/90	RFP review draft CSP. Resolve and finalize (CSP).
1/24/90	2/21/90	EPA and CDH review CSP
2/22/90	3/22/90	Finalize CSP
3/23/90	5/21/90	Implement CSP (Perform survey/interviews CSP)
5/22/90	7/19/90	Review survey findings and prepare CRP draft
7/20/90	8/17/90	RFP review draft CRP
8/20/90	9/18/90	Resolve comments and finalize draft (CRP)
9/19/90	10/17/90	EPA/CDH review (CRP)
10/18/90	12/18/90	Resolve issues and finalize CRP
12/19/90	2/6/91	Public comment period - CRP
2/7/91	4/5/91	Public comment response (Responsiveness Summary)
4/8/91	5/6/91	EPA/CDH final review Response Summary (CRP)